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CROP TALK

OMAFRA Field Crop Specialists — Your Crop Info Source

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Are Soil Samples Consistent Year to Year?

by Keith Reid, Soil Fertility Specialist, OMAFRA, Stratford

Occasionally I get questions about whether soil sample values change depending on the weather in a given year, or the time of year the sample was taken. This is a question that troubles me, because there is no easy answer. Soil test values vary over time, but for most soil tests the variation is relatively small, and the direction of change is not always predictable.

Sample Depth Influences Soil Test

This leads me to believe that most of the variation over time is NOT reflecting changes in the chemistry of the soil, but instead is a reflection of changes in what soil was sampled. We know that the fertility of the soil declines as we go deeper. This is particularly true in forage or no-till fields that have not been worked for many years. Even in conventionally tilled fields, the vertical mixing of nutrients is not perfect. Some stratification develops over the growing season as plants pull nutrients to the surface and then leave them in the crop residue. Because of this stratification, the depth of soil that is sampled can have a large impact on the soil test value for that sample.

Soil Conditions Can Affect Sample Depth

So what does this have to do with variation in soil test over time? The depth of the sample is often related to how hard the ground is, so a sample from a dry, compacted field will likely be shallower than from a loose or moist field.

Cropline 1-888-449-0937

Ontario Ministry of Agriculture, Food & Rural Affairs, Crop Technology Branch

Agricultural Information Contact Centre: 1-877-424-1300
Publication Order Centre: 1-888-466-2372
Northern Ontario Regional Office: 1-800-461-6132
OMAFRA Web Site: http://www.omafra.gov.on.ca//english/crops/index.html

To illustrate my point, a farmer called who was quite concerned about the increase in his soil test values after one application of liquid manure to his pasture fields. He had been collecting samples in August, when the weather had been very dry. When I asked more questions he admitted that the samples might have been 4 inches deep rather than 6 inches, and that he had sampled through any manure that was laying on the surface. A subsequent sample, taken later in the fall when the ground had softened, showed more reasonable soil test values.

Consistent Sampling Time Equals Consistent Results

You can increase the consistency of your sample results over time by taking care in how the samples are taken. The advantage of always sampling at the same time of year is that soil conditions are usually consistent, so it is easier to achieve consistent depth. Watch out though, that a consistent depth doesn't mean you are sampling into the subsoil in compacted or eroded areas of the field, or your sample will show lower results than it should!

Soil Compaction

by Adam Hayes, Soil Management Specialist – Field Crops, OMAFRA, Ridgetown

For many years now, deep tillage implements have been suggested as tools that can be used to loosen soil and improve crop yields. These implements can provide some benefit by loosening soil compaction, but they are really prescription tools and not to be used at will. Similar to a prescription drug, if you don't have a problem then the drug isn't going to do anything.

Prevention

Preventing soil compaction is a better than trying to fix the problem. There are a number of management options that can be implemented to try to minimize soil compaction.

- Some areas of the province are dry, but other areas have more soil moisture than is normal for this time of year. Watch soil moisture and try to stay off the field when it is wet. This is easily said but sometimes hard to do because harvest schedules dictate the crop must come off.
- Reduce the pressure on the soil. This can be done by attempting to keep axel loads below 5 tons per axel. Use radial tires at low inflation pressures to create a larger foot print.
- Reduce the traffic on the field. Load wagons or trucks on a road (if it can be done safely) or a lane. Carry heavy loads down one area instead of all over the field.

Diagnosis

Do you have a soil compaction problem? Before you pull out the deep tillage implement, take some time to determine if soil compaction is really the problem. It is relatively easy to determine if you have a compaction problem. Using a tile probe or similar rod, probe the area to a depth of 50 cm (20 inches). Compare to a fence row or unaffected area. The tile probe should be slowly inserted into the ground at a steady speed. Your arms should be slightly bent, acting as the pressure gauge measuring the force required to push the tip of the probe through the soil. Record depths at which the tip of the probe requires more force to get it through the ground. This can be done by stopping when the probe reaches the layer with more resistance, putting your fingers around the probe at the soil surface and removing the probe to see the depth. It can be repeated at the bottom of the layer.

You can also use a shovel to dig up plants in an affected area. Look at the roots and compare to roots of plants in a healthy unaffected area. Compacted areas will have plants with malformed or restricted roots. Roots in a compacted area may also be concentrated in the top few inches of the soil. Make sure the areas you compare with the probe have similar soil moisture levels.

If you detect an area that you believe is compacted, it is a good idea to dig down to that area and confirm. Sometimes there can be a soil texture change which slows the probe and is not a compacted layer. Also, if the soil compaction is at a depth below 12-14 inches, there is not much you can do about it with tillage.

Remedial Measures

If you have determined that there is a compacted layer at a depth that you can do something about, then you can consider remedial measures. Deep tillage is an option. It should be done when the soil is dry, with an implement that will shatter the soil. Ideally, a cover crop should be planted following the operation that will put roots down to help keep the soil cracks open.

It is important once the tillage is done to avoid the practices in the future that caused the compaction in the first place. A non-tillage option is to plant a deep-rooted crop to penetrate a compacted area.

Improving Continuous Soybeans

by Horst Bohner, Soybean Specialist, OMAFRA, Stratford

The benefits of crop rotation for soybeans have been well documented. Soybeans yield at least 10% better when rotated with corn and wheat, rather than grown continuously. On very heavy soils, when corn and cereal crops may not be reliable options, many years of soybeans result in some rotations. Not all the yield benefits from crop rotation are fully understood. However, some of the yield increases can be attributed to lower insect and disease pressure, improving soil organic matter, decreased erosion and improved soil structure.

Will A Cover Crop Improve Soybean Yields?

Soybeans make the soil 'tighter' due to a reduction in the stability of aggregates, which makes soils more prone to compaction. Could soil structure be significantly improved by planting a cover crop in the fall immediately after soybean harvest and leaving that cover crop until the spring prior to the next soybean crop?

A few producers in southwestern Ontario have experimented with growing an oat or rye cover crop after soybeans in an effort to increase soybean yields. Is there evidence that growing a cover crop may provide a yield benefit for continuous soybeans? In a US study where cover crops were broadcast into a standing soybean crop at leaf-drop, the following year's soybeans yielded significantly higher. Refer to Table 1.

Table 1. Second Year Soybean Yield Improvements Due to Cover Crops. (Lancaster County, Pennsylvania, 1999-2001)

Cover Crop	Dry Matter Production (T/ac)	Soybean Yield (Bu/ac)
Rye	2.0	44.8
Ryegrass	0.9	39.4
Summer Oats	0.2	39.7
Winter Wheat	1.4	45.4
Rape*	0.3	41.4
No cover crop		37.3

*Rape data from 2000 and 2001 only. Data from Penn State Research and Extention Center, Landisville.

Cover Crop Trials

The St. Clair Region Soil and Crop Improvement Association is going to experiment with seeding cover crops in continuous soybean fields, starting this fall. In order to establish a good stand the cover crop will be no-till drilled or broadcast and incorporated. Broadcasting seed into a standing soybean crop has been tried in the past with limited success. This year both winter wheat and rye (for those willing) will be evaluated as a cover crop for continuous soybeans. If you wish to get involved please contact Adam Hayes adam.hayes@omafra.gov.on.ca or Horst Bohner horst.bohner@omafra.gov.on.ca.

Dog Strangling Vine – Results From 2006

by Mike Cowbrough, Weeds Specialist, OMAFRA, Guelph

In the March issue of "Crop Talk" an overview of Dog Stangling Vine was presented. We don't have a clear understanding of how to control this highly invasive species by biological, cultural or chemical control methods.

A field trial was initiated in the Durham Region this summer to work towards developing suitable control options . The objective of this preliminary trial was to determine the sensitivity of Dog Stangling Vine to a number of herbicides. Unfortunately, there was not a single herbicide tested that provided control. However, there were a few treatments that inhibited the production of seed pods, which may be beneficial for long term management.

The following images illustrate the response of Dog Strangling Vine to selected herbicide treatments. Herbicides were applied at the early-bud to flowering stage (near the end of June). It has been speculated that this is the most effective stage for control, particularly with non-selective herbicides such as glyphosate.

It is clear that more information on control strategies needs to be obtained. Therefore research trials will continue in 2007. We have already received feedback on different control methods that landowners have tried in the past. We do appreciate this information. If you have implemented any management strategies that have been successful, please share it with us. (mike.cowbrough@omafra.gov.on.ca or 519-824-4120 Ext. 52580).

Figure 1. An untreated Dog strangling vine plant

Figure 2. Leaf and pod injury following an application of amitrole. Note the reduction in pod size, with no seed within the "reddened" pod.

Figure 3. Pod distortion following an application of dicamba/2,4-D

Figure 4. Dog strangling vine following an application of glyphosate. Note the leaf defoliation and yellowing along with the complete lack of seed pods.

Figure 5. Dog strangling vine following an application of Arsenal (the only herbicide that lists this weed on its label). Note the leaf discoloration and the lack of any seed pods.

Grazing Corn Stover

by Jack Kyle, Grazier Specialist, OMAFRA, Lindsay

Corn stover can provide a viable, low cost feed for wintering mid-gestation beef cows.
The digestible energy in a crop of corn is half in the grain and half in the stover After the grain is harvested, half the feed energy is still in the field in the leaves, husks and stalks. The cows also can glean the kernels and small cobs that passed through the combine.

Most corn stover fields can provide between 1 and 2

months of grazing per cow per acre (eg. 50 cows on 50 acres for 1-2 months). Cows should be monitored closely and body condition scores recorded so that necessary supplementation can be done when required.

Stover Digestibility
The feed value of the stalks will drop after the harvest date, so the earlier you can graze the better. The TDN value could initially be as high as 70%, but as the winter progresses this value will drop down into the 40% range. Part of this decline is due to the weathering of the leaves and stalks. The cows will eat the preferred leaves and grain they can find early in the grazing period, and leave the less digestible stalk material for later grazing.

Grain
Check the field for available grain - both kernels on the ground and small cobs missed by the combine. If there is a lot of available grain, it may be necessary to limit the access so that the cows don't over-load on grain. This can be achieved by using temporary electric fence to strip-graze the field, or by restricting the grazing time to a few hours during the day. The cows will tend to eat the grain first, then the husks and leaves, and lastly the stalks. Controlling the size of the area being grazed will also help to keep the energy level of the cows' diet more uniform.

Supplementation
Once the leaves and husks have been consumed, it may be necessary to supplement with good quality hay. Monitor the manure for any visible signs of grain. If no grain is present in the manure it is time to start supplementing with hay. A 1300 lbs. cow will require about 6 pounds of good quality hay to meet her protein needs. Salt and mineral should be available free choice at all times. Cows will consume about 10 gallons of water (per head per day) under cool conditions. Water should be readily available. Clean fluffy snow can also be used as the water source.

Soil Conditions
If the ground is wet there will be some pugging and roughening of the soil surface. In a no-till cropping system, consider waiting until the ground is frozen or selecting the driest fields with a low clay content to graze. Any fall damage to soil structure will be at least partially rectified by the freeze-thaw action over the winter. Damage in the spring will have a more significant impact on the following crop. Graze the stalks during the fall and early winter and remove the cows from the field before spring thaw conditions start.

By managing the stover field as you would a pasture field - controlling the area being grazed and staying off when soil conditions are wet- a producer can have the best of both the feed and crop world.

Corn Projects 2006

by Greg Stewart, Corn Specialist, OMAFRA, Guelph

Keeping your eyes, ears and mind open can allow you to ask the right questions, test some new ideas and examine the way you are doing things.

1) Replant Investigation
The Ontario Corn Committee has a project underway to re-evaluate provincial recommendations on re-planting corn that has less than optimal stands. Funding for this project is being provided by the seed corn companies and by OCPA. Corn will be planted in trials at Ridgetown, Exeter and Elora on three planting dates (late-April, early-May and late-May) with final populations set at 12,000, 18,000, 24,000 and 30,000 plants per acre. Eight representative hybrids will be tested at each location.

This project will:
1) generate revised recommendations on the cost effectiveness of re-planting based on original planting date and plant population, and
2) test whether or not a "one-size fits all" approach is appropriate for re-planting decisions or whether there are significant differences amongst hybrids (i.e. flex versus fix).

Result will be included in the OCC Report in December 2006 or can be viewed at www.gocorn.net.

2) Peas As Your N Supply
A 15 site-year study (2003 to 2005) indicated that a pea cover crop can be effectively established into wheat stubble fields with nitrogen fixing rates similar to a good stand of red clover. On these 15 sites, above ground pea forage yields averaged about 2 tons per acre with an N content of about 80 lb/acre. Early establishment of the crop, as soon as possible after wheat harvest, is critical.

Research in 2006 and 2007 will zero in on two questions:
1) How much of the cover crop N can actually be credited towards the subsequent corn crop? and,
2) Is there any corn yield boost, independent of N_x, that can be attributed to the peas? Stay in touch

with progress on this project, or become a co-operator by calling the OMAFRA CropLine at 1-888-449-0937.

3) N Calculator Validation
After years of gathering data and developing new nitrogen recommendations for corn, 2006 is the first year where these new OMAFRA recommendations are being put to the test in a wide array on field scale trials. Funding for these field scale comparisons is being provided by OCPA, Agricorp, OMAFRA and the Agricultural Adaptation Council (CORD IV). In 40 fields across the province growers are asked to follow the OMAFRA recommendations on the bulk of the field. Several strips will also be imposed where the nitrogen rate is significantly higher than the new recommendations and based on the growers past N use experience. Assessments at the end of the season will evaluate the profitability behind both N rates. This work will be of particular interest to growers in eastern Ontario, where the research data supported nitrogen recommendations considerably lower than traditional practices and lower than the rest of the province.

4) Drying Costs Versus Yield
We recently have been analyzing the relationship between harvest moisture (drying costs) and yield from a wide range of hybrids planted at the OCC performance trials over the last several years. The results have lead me to suggest that even with the relatively high costs of drying, selecting full season hybrids with higher yields and higher drying costs was a more profitable option than shorter season hybrids with lower yields and lower drying costs.

I have been challenged that this conclusion only applies to early-planted corn. I think that is correct! However, this still is an area with room for more study. Since hybrid selection and drying costs can vary tremendously from one farmer to another, this is the kind of number crunching the individual growers should be doing on their own. For example, on your operation, how many additional bushels of yield does it take to cover the costs of an additional point of moisture? If you go to www.gocorn.net and click on 1987-2005 Corn Hybrid Selector you can find some spreadsheet tools to help you with these calculations.

5) Sulphur For Corn
Recent studies have shown responses to sulphur that were not found previously. Sulphur deposition from acid rain and dry deposition, a result of air pollution, has dropped dramatically as efforts to reduce sulphur emissions have been implemented. For the first time in memory, winter canola fields in Grey County in 2005 did not set seed, and were diagnosed to be a sulphur deficiency. Canola is a very heavy user of sulphur, needing approximately 15 pounds/acre/year. Wheat requires 12 pounds/acre/year. Corn requires slightly less than this.

Studies by Dr. Kurt Thelen, Michigan State University, found from 0 to 23 bu/ac yield increase in corn yield in 2005, with an average increase of 11 bu/ac, as a result of sulphur application. The Middlesex Soil and Crop Improvement Association has a project underway this year to compare dry starter fertilizer with and without sulphur. Stay tuned for results this fall.

Net Wrap or Twine?

by Joel Bagg, Forage Specialist, OMAFRA, Lindsay

What's better on large round bales - net wrap or twine? Of course, the question is largely a matter of personal preference, but it has been objectively researched by Dr Kevin Schinners, Agricultural Engineer at the University of Wisconsin. Some of the suggested advantages of net wrap include faster baling, lower baling losses, better bale integrity during handling and transport, better water shedding ability and lower outdoor storage losses. The net wrap material and equipment do add to the costs of baling, but Schinners' research results justify the added costs in many situations.

Faster Baling
Only 1¼ to 2½ turns of the bale are required to wrap a bale with net wrap, compared to 20 to 30 turns with twine. According to the WI research, a baler set up to net wrap can bale 32% more bales per hour than one using twine. This speeds up the baling process, allowing more to get done when the weather is good. It also saves fuel and labour. This significantly greater productivity is the main advantage of net wrap balers, particularly for farmers with large acreages and custom operators who can pass on the higher costs to their customers.

Reduced Baling Losses
Because you are spinning the bale in the chamber significantly fewer times while wrapping with net wrap rather than with twine, there is significantly less leaf loss dropping out of the baler. In the WI research, wrapping losses were 1.0% of dry matter with net wrap and 2.9% with twine.

Reduced Outdoor Storage Losses
Outdoor hay storage results in a great deal of

spoilage. Storing hay inside is recommended, but not always possible. Tarps can work, but can be challenging to maintain. The reality is that there are often lots of bales stored outside uncovered. "Water shedding ability" for outdoor bale storage is frequently cited as a perceived advantage of net wrap.

In the WI trials measuring moisture levels in the "outside rind" of the bales, net wrapped alfalfa bales did shed rainfall better than twined wrapped bales and were lower moisture. Finer stemmed grasses seemed to form a better thatch. However, some of the advantage of improved water shedding ability is lost if bales are not stored on a well drained surface (crushed rock, pallets, etc). Otherwise, rainwater will run off the bales and accumulate at the bottom.

In this study, in the outside hay rind, nutrient composition was significantly higher and dry matter losses were lower for net wrap compared to twine, but the core was generally unaffected. Average total dry matter losses for bales stored outside on the ground were 11.3% for plastic twine wrapped bales and 7.3% for net wrap. However, both of these options have significantly higher losses than inside storage. Net wrapping bales for uncovered storage outside does not substitute for inside storage.

Other Advantages
If you are selling hay, net wrapped bales have greater aesthetical appeal and marketability, particularly cover-edge net wrap. Net wrapped bales have better bale integrity during handling and transport. This is particularly the case with round bales of chopped straw.

Additional Costs & Other Disadvantages
Balers can be easily equipped to net wrap bales. The wrapping mechanism can increase the initial cost of the baler by 15 to 25%. For example, it could add $5,000 to the cost of a new $30,000 round baler. The net wrap material also costs more. Depending on the number of wraps and other assumptions, the cost may be approximately doubled from about 50¢ to about $1 per bale, or about $1.25 to $1.75 more per tonne of dry hay.

In addition to the cost, some producers have found that net wrapped bales are more inclined to freeze hard to the ground. Although removing frozen twine from an iced-over bale during the dead of winter is nobody's favourite job, this can be even more challenging with net wrap.

A net wrap system costs more than twine, but in many situations, including large volume operators, hay producers marketing large round bales, and farmers using some outdoor storage, those costs can be recovered by faster baling and reduced dry matter losses.

Reference
"Large Round Bale Storage: Twine, Net Wrap & Low Moisture Wrapped Silage" - Shinners K, R Muck & A Albrecht. 2002 ASAE Conference Proceedings.

Do You Need Insecticide Seed Treatment on Your Wheat?

by Tracey Baute, Field Crop Entomologist, OMAFRA, Ridgetown

Should I put Cruiser seed treatment on my wheat this fall? I've been asked this many times already, so I thought I had better put it in writing. My response ....."well, it depends on what kind of insect problems you have in your wheat field".

Use Only When Needed
Like all insecticide seed treatments, to see the benefit of yield protection, you need to have an insect problem worth controlling in the first place. You should only use insecticides when an insect is present and being a pest. Though some studies indicate a potential yield gain with insecticide seed treatments even in the absence of insect pressure, this yield gain is not consistent enough to guarantee a return on the investment of the seed treatment. We haven't entirely figured out all of the reasons behind this occasional yield increase in the absence of pests. It could be partly due to a pest being present that we were not aware of that was robbing yield and is controlled by these chemistries. With the tough times in agriculture it is not only economically wise but also environmentally prudent to use insecticide seed treatments only in those cases where insects are a concern.

Wireworms & Grubs
So .... who would benefit from using an insecticide seed treatment such as Cruiser on their wheat? Growers who have a history of wireworm or grub issues should consider using insecticide seed treatments in those fields. The neonicotinoid insecticide seed treatments, such as Cruiser and Poncho, work very well on both wireworms and European chafer or June Beetle grubs. You should not expect 100% control, but these chemistries should give good to excellent control. In heavier infestations, you may still see some injury, but the injury would be lessened.

Not For Hessian Fly, Slugs, Cereal Aphids
If your pest issue in wheat is Hessian fly, slugs or cereal aphids, insecticide seed treatments are not the control method you should be using. Hessian fly and cereal aphids are better controlled by variety selection, and by adjusting planting dates to after the fly free dates, to reduce the risk of adults finding your fields. Insecticide seed treatments do not work on slugs. So far, the only recommended control option for slugs is tillage to disturb the residue on the soil surface.

Scout To Identify Problems
If you are not sure if you have an insect problem, this is a good time of year to go digging to see what is there. For information on scouting techniques and bait traps, refer to the Cereal Chapter of the "Agronomy Guide for Field Crops" (OMAFRA Publication 811) at: www.omafra.gov.on.ca/english/crops/pub811/p811toc.html

If it is your first time using these insecticide seed treatments, leave an untreated check strip to find out for yourself if you made a good investment decision.

What's NEW With Wheat?

by Peter Johnson, Cereals Specialist, OMAFRA, Stratford

Varieties
There are some exciting **new** wheat varieties available for this year!

Soft White
Ashley is the first soft white wheat variety to have a MS rating for Fusarium, based on 3 year (solid) data. It also has the highest yield of the soft white category, performing particularly well in Area 2. The main downfall - standability....

Soft Red
Finally! There is something available to rival the yield of 25R47. The new variety **Emmit** is top of the charts, performing consistently on three year data. Emmit is even on top in Area 3, giving a good indication that the yield should be stable. In addition to yield, Emmit has an MS for Fusarium, again based on 3 year data. The main concerns - standability (equal to Wisdom) and low test weight compared to the class.

Hard Red
BORING! Simply nothing new this year.

Other notes:

- **Tribute** (25R26 quality) will have a $12.00/tonne premium attached to it this year.
- **25R51**, the new variety from Pioneer with improved Fusarium tolerance over the other Pioneer lines, was missed in the performance trials last fall. Thus there is no official data. Pioneer data indicates a 5.8 bu/ac yield lag compared with 25R47.
- **R055** (srw) and **E1009** (sww) are two other new lines that may appear in a small way by October. Both are pending registration, and are sponsored by Genesis Brand Seeds. Yield index on 1 year data is 106 to 108.
- **Going Going.... Warwick, RC Strategy,** and **25R23** are all being dropped from the performance trials this year. This is an indication that they will not be sold next fall. **AC RON** has been removed from the performance trial data this year, as the company no longer has any seed available for sale.

STRAW?
For those growers that are interested in straw yields, Table 1 provides an indication of what might be expected from various soft red wheat varieties. Please note that this is only one site with one replicate, and thus it is extremely thin information. However, based on many other visual observations, it gives some numbers to what many growers have already observed.

Table 1: Straw Yields

Variety	Bales	Tonnes/acre
Emmit	90	1.6
Vienna	83	1.3
FT Wonder	68	1.1
25R23	67	1.1
25R47	61	1.0

Cruiser
Based on 25 side-by-side trials this year, the average yield increase on wheat was only 1.6 bu/ac. The response appears to be an "all or nothing" phenomenon. Of the 25 trials, only four sites showed significant yield gain, likely where wireworm or chaffer pressure was high. However, as in the article by our entomologist Tracey Baute, it is a bit hard to predict when this will be a problem, other than field history.

Table 2: Cruiser Results

Trials	Cruiser	No cruiser	Difference
25	90.1	88.5	1.6
4	74.1	66.7	7.4

Wheat Seeding Populations??

Continued frustration!! Far too many growers use farm saved seed, and up the population "just in case" and because "it doesn't cost much". After three years of population studies, there are some conclusions that you should be aware of.

First - Planting early with varieties that tend to lodge can result in disaster if you seed at high populations. Figure 1 shows exactly what happens - less yield!! When you are planting early, target 1.2 million seeds per acre.

Second - There is absolutely no benefit to going above the recommended seeding rate (1.5 million seeds per acre) when planting at the normal time. Time and time again my results show that in the normal planting window, there is no benefit above 1.2 million. Occasionally we see an increased yield at the 1.5 million rate, but this is definitely the upper end.

Last - Even when planting late, on heavy soils, it is rare to have a response above 1.5 million seeds/ acre. Occasionally it occurs, as seen in Figure 2. If planting late into less than ideal conditions, with a marginal weather forecast, increasing seeding rates to 1.8 million is simply buying insurance. Note, however, that the yield potential in these situations is reduced, and that the right answer is to **plant on time!**

Figure 1: September 20 Vienna (lodging)

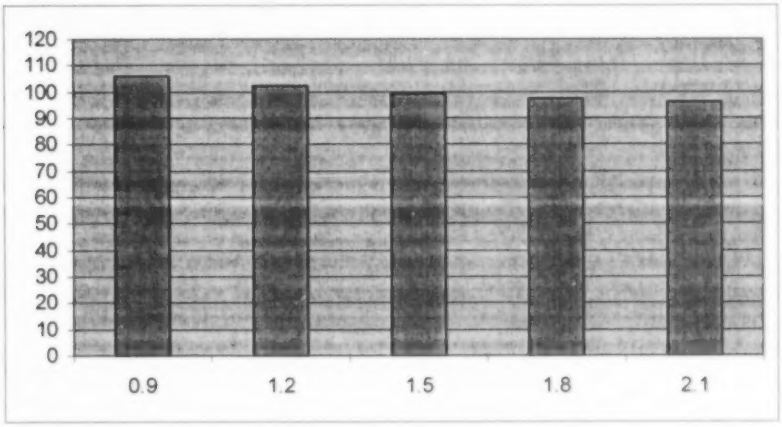

Figure 2: October 15 planting date

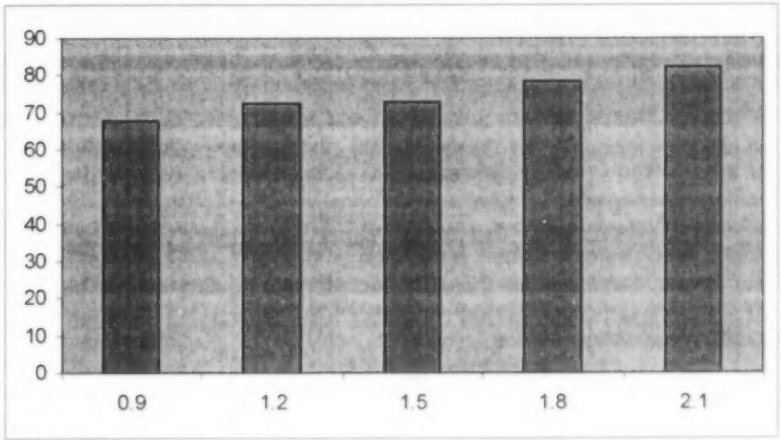

Table 1 - Ontario Performance Trial; Winter Wheat 2006; Cumulative Yield Index[1] Summary for Area I & II Combined[2] OCCC August, 2006.

Variety	Class[3]	5 year	4 year	3 year	2 year	1 year
Superior	sww	101[4]	100	99	99	99
AC Mackinnon	sww	103	103	101	103	106
AC Mountain	sww	99	99	98	99	101
Ashley	sww-a		101	101	101	106
25W41	sww-a			98	96	96
D8006W	sww-a			101	100	103
D6234W[5]	sww				100	102
Wisdom	srw	101	100	100	101	100
Warwick[5]	srw	100	100	99	99	102
25R23[5]	srw-a	107	106	105	104	105
Vienna	srw	104	103	102	99	90
FT Wonder	srw	100	99	100	100	97
25R47	srw-a		110	108	109	104
RC Strategy[5]	srw		98	97	98	99
Tribute	srw			103	104	102
Emmit	srw			110	110	109
Genesis: E1007R	srw-a				105	108
Genesis: R045	srw-a				99	98
Huntley	srw-a				102	100
ADV Dyno	srw					99
AC Morley	hrw	97	98	97	94	96
Maxine	hrw-a	95	94	93	93	91
Warthog	hrw	97	96	96	96	100
Harvard	hrw	101	99	98	97	97
Carlisle	hrw-a	99	98	98	98	96
AC Sampson	hrw	97	97	96	95	94
Means		6.44	6.47	6.41	6.31	6.48
No. of locations		32	26	20	13	6

[1] Indexed for each site and then averaged, index = 100 x (variety yield/site yield). Values differing by less than 3 within a column may not represent true differences in yield.

[2] Area I & II Combined = 2900 West of Frontenac County

[3] sww = soft white winter, srw = soft red winter, hrw = hard red winter, a = awned

[4] Cultivar yield rankings may vary from year to year. Decisions are therefore best made using data with the greatest number of years.

[5] Entry has been dropped from the 2006/2007 Winter Wheat Performance Trial.

NOTE: All areas of the Performance Trials are available on the website at:
http://www.omafra/gov.on.ca/english/crops/facts/wwperf_06.htm

Copies are available at your local OMAFRA office or by calling the Contact Centre @ 1-877-424-1300.

Table 4 - Ontario Performance Trial; Winter Wheat 2006 – Cumulative Yield Index[1] Summary for Area III[2], OCCC, August 2006.

Variety	Class[3]	5 year	4 year	3 year	1 year
Superior	sww	106[4]	105	107	105
AC Mackinnon	sww	103	104	106	110
AC Mountain	sww	104	105	106	112
Ashley	sww-a		99	97	93
25W41	sww-a			92	95
D8006W	sww-a			100	100
D6234W[5]	sww				99
Wisdom	srw	101	100	102	102
Warwick[5]	srw	95	93	92	94
25R23[5]	srw-a	100	99	99	101
Vienna	srw	108	109	106	106
FT Wonder	srw	97	97	96	93
25R47	srw-a		112	107	109
RC Strategy[5]	srw		93	91	88
Tribute	srw			90	82
Emmit	srw			112	118
Genesis: E1007R	srw-a				110
Genesis: R045	srw-a				95
Huntley	srw-a				96
ADV Dyno	srw				111
AC Morley	hrw	96	95	100	101
Maxine	hrw-a	93	91	95	92
Warthog	hrw	98	99	100	102
Harvard	hrw	101	103	103	103
Carlisle	hrw-a	98	97	96	93
AC Sampson	hrw	99	100	103	102
Means		6.07	5.98	5.62	6.28
No. of locations		9	6	4	2

[1] Indexed for each site and then averaged, index = 100 x (variety yield/site yield). Values differing by less than 3 within a column may not represent true differences in yield.

[2] Area III = East of Frontenac County. **There were no yield data for Area III in 2000

[3] sww = soft white winter, srw = soft red winter, hrw = hard red winter, a = awned

[4] Cultivar yield rankings may vary from year to year. Decisions are therefore best made using data with the greatest number of years.

[5] Entry has been dropped from the 2006/2007 Winter Wheat Performance Trial.

All Area III trials lost in 2005, thus no 2 year averages to report

Table 5 - Ontario Winter Wheat Varietal Characteristics Based on Data From Across Ontario 2006 OCCC, August 2006

Variety	Test Weight (kg/hl)	TKW (g)	Winter Survival (%)	Lodging (0-9)[1]	Height (cm)	Heading Date[2]	Powdery Mildew (0–9)[1]	Leaf Rust (0–9)[1]	Septoria (0–9)[1]	Fusarium Rating[4]	Years (Fusarium Data)
Superior	73.9	40.0	89	1.8	102	156	3.5	4.5	4.9	S	5
AC Mackinnon	73.8	39.9	92	1.6	99	153	2.3	4.3	5.0	HS	5
AC Mountain	73.8	40.8	92	2.1	102	154	3.5	5.7	4.6	S	5
Ashley	74.0	42.7	94	2.0	101	156	0.9	1.5	4.7	MS	3
25W41	76.0	37.0	80	1.0	83	153	6.1	2.2	5.4	S	3
D8006W	73.8	41.1	93	1.9	92	152	1.3	3.0	4.4	HS	3
D6234W[5]	75.6	37.2	88	2.4	94	155	2.2	3.9	5.1	HS	2
Wisdom	76.0	37.1	91	2.0	94	150	4.3	1.1	5.0	MR	5
Warwick[5]	76.8	40.0	94	1.4	93	152	2.3	1.3	4.6	MS	5
25R23[5]	75.8	39.1	88	0.4	90	154	3.1	5.4	3.8	S	5
Vienna	73.0	32.8	90	2.8	94	153	0.2	7.5	3.5	MR	5
FT Wonder	76.8	42.7	92	2.5	94	152	2.4	6.2	4.7	MR	5
25R47	74.2	37.8	93	1.7	84	153	4.5	3.2	4.6	S	4
RC Strategy[5]	76.6	34.3	90	2.9	82	151	2.0	1.2	3.5	S	4
Tribute	79.3	37.5	84	0.5	79	152	0.4	1.0	2.7	S	3
Emmit	75.1	39.4	93	2.0	92	153	4.0	5.2	5.0	MS	3
Genesis: E1007R	76.5	39.6	95	1.0	90	153	2.9	3.4	5.0	HS	2
Genesis: R045	76.0	35.1	94	2.5	85	153	1.9	2.2	3.8	S	2
Huntley	77.0	42.0	86	4.3	95	151	3.0	1.4	3.5	MS	1
ADV Dyno	73.4	40.8	93	2.5	96	157	3.0	4.9	5.1	MR	1
AC Morley	77.9	39.2	84	3.7	114	155	2.2	0.9	3.5	MR	5
Maxine	77.8	44.0	89	1.4	90	153	4.6	2.6	5.3	HS	5
Warthog	78.0	38.6	90	1.6	98	155	3.1	2.2	4.7	MS	5
Harvard	78.5	44.3	92	0.5	95	153	4.3	2.3	5.3	S	5
Carlisle	78.5	48.2	91	1.3	85	151	3.3	3.0	5.2	MS	5
AC Sampson	74.7	41.4	90	2.7	100	157	3.8	5.5	4.8	HS	5
No. of locations	8	8	4	4	8	7	5	3	4		

[1] For ratings 0-9, a high score is undesirable.

[2] Heading may vary from year to year and should only be used to indicatie relative differences.

[4] Fusarium ratings are based on Fusarium head blight ratings and deoxynivalenol (DON) levels from inoculated provincial trials. MR=moderately resistant (best); MS=moderately susceptible; S=susceptible; HS=highly susceptible (worst);

[5] Entry has been dropped from the 2006/2007 Winter Wheat Performance Trial